SALT

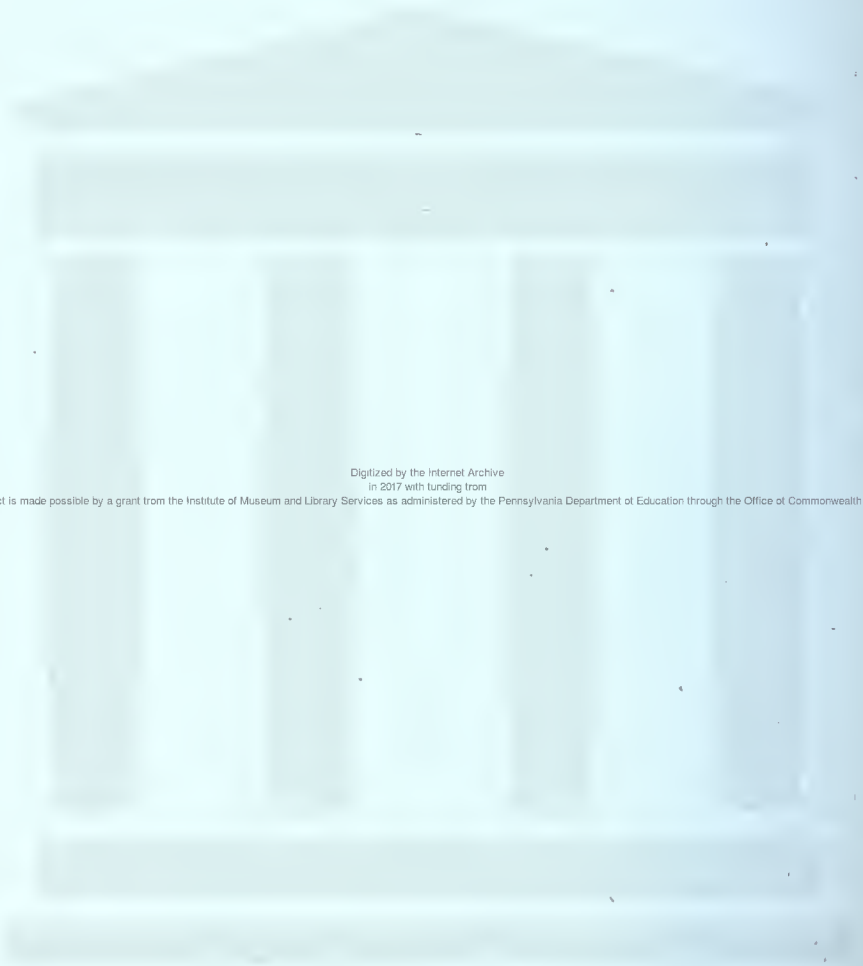
a popular lecture

by

N. SHVEDOFF.

St.-Petersburg.

1893



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POPULAR LECTURES

of the

Russian Pedagogic Museum of Military School Establishments.

SALT

A POPULAR LECTURE

by

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Печатано по распоряженію Главнаго Управленія военно-учебныхъ заведеній.

What is common salt, how is it procured and what use is made of it?

Every one is acquainted with salt; you have all seen it, you know its taste; you know also that food without salt is insipid, it has to be salted. But not every one knows what salt is, what it consists of. Learned men have discovered that the salt, which we use in preparing our food, consists of *chlorine* and *sodium*, and therefore they call it *chloride of sodium*. Every one is acquainted with gold, silver, iron and copper, which are called metals. Well, sodium is also a metal; when pure, it is bright, as white as snow, and as soft as wax, so that it can be cut with a knife. Every one knows the gas which lights up our streets. Now, chlorine is also a gas, but it does not burn, it has a disagreeable smell, and is of a yellowish green colour. It is very injurious. If we inhale a little of it, we begin to cough, if we inhale much, it may make us ill. How is it then that chlorine, a gas, can be so combined with sodium, which is a metal, as to produce salt? You are aware that iron, left for some time in damp air, becomes rusty, i. e. gets covered with a brownish powder — *rust*. Rust is not like iron nor is it like air; it is

quite a different substance. The fact that only air and iron produce this brownish powder — rust — shows that from two substances can be obtained a third of a totally different kind. If we heat a bit of sodium, and place it in a phial filled with chlorine, sodium will immediately begin to burn, and when it has been all consumed, we shall have no more chlorine nor sodium in the phial, but instead of them a new substance—a white saline powder with the taste so familiar to us. As the phial contained nothing but chlorine and sodium, we must conclude that salt consists only of these two substances. The salt thus obtained is perfectly pure, containing only chlorine and sodium, and it does not get damp or dissolved if left for any length of time in a room. Consequently pure salt without any admixture does not imbibe moisture which is always so abundant in the air. The case is quite different with the salt that we meet with in trade, especially grey salt. It gets so damp in the air that it dissolves, and this is a true sign that the salt is not pure, that it contains such substances as contribute to make it damp.

Every one knows that salt *dissolves in water* like sugar, and almost as quickly in cold as in hot water. If you dissolve in a glass of water so much salt that after the lapse of two hours a part of it remains at the bottom undissolved, you obtain what is called a *saturated solution*. If you gently pour off this solution into a plate, and let it stand in a warm place, you will find after some time that the quantity of water in the plate has diminished, and that small pieces of salt have settled at the bottom. The quantity of water in the plate has diminished because a part of it has turned into vapour, has *evaporated*. This phenomenon is familiar to every body. Thus, in Russian baths, when water is poured over hot stones, it instantly evaporates; when water is boiling, we can see the

vapour rise and the water diminish; if we place a plate of water in a room, we cannot see the vapour rise from it, but after some time we can notice that the water has diminished in quantity, consequently a part of it has evaporated. The bits of salt settled at the bottom of the plate are all of one regular form, the form of a *cube* or *hexahedron*.

These bits of salt, always having a regular form with polished sides, are called *crystals*. It is not necessary to prepare a saturated saline solution in order to obtain crystals of salt. Evaporation makes every solution denser and more saturated, and it is from such a solution that we obtain crystals of salt. Rapid evaporation produces small crystals, slow evaporation large ones. Sometimes water gets inside the crystals while they are forming, and if you throw salt into the fire, it crackles. This happens because heat turns the water contained in the crystals into steam, which explodes like gunpowder.

Salt is abundant in nature, and is found either in hard *layers* in the soil like stone, and is therefore called *rock salt*, or as a solution in seas, lakes and brine springs.

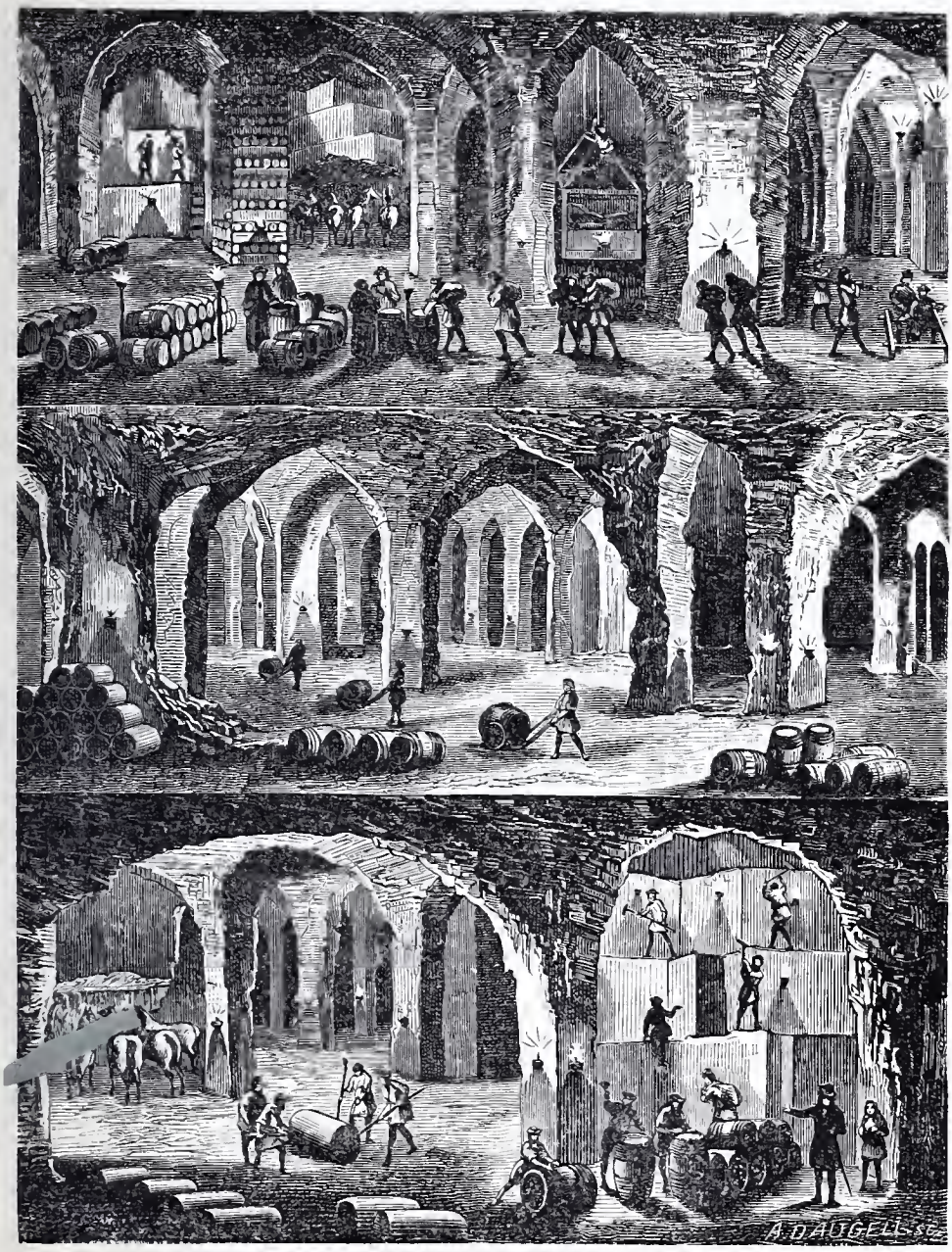
Rock salt is found in many countries. In some places it lies rather deep in the earth, in others it is on the surface. In some places it is perfectly pure and transparent like a piece of ice, in others it is of different colours: grey, pink, green, which proceeds from the admixture to it of other substances, which tinge it.

Salt is obtained in different places in different ways, naturally those being adopted which are the cheapest and the most convenient. As an example I am going to tell you how it is procured near the town Velitschky in Austria, and also with us in Russia in the neighbourhood of Iletsk, 45 miles from Orenburg, where we find the most remarkable layers of pure rock salt.

The layer of rock salt in the neighbourhood of Velitschky occupies a surface of 1417,3 acres and lies 980 feet deep; it consists of 3 layers: the upper one is grey from the admixture of clay; the middle one has sand in it, and the lower one, lying at the depth of 210 feet, contains pure and transparent salt like the clearest ice; it is called Szybick salt, and presents the aspect of large crystals closely joined together. Being very hard it is used as material for different kinds of objects, as candlesticks, saltcellars etc. This is the salt that is procured. A square well or shaft, as it is called, is dug from the surface down to the first layer of salt. When this is reached, salt is broken like stone, and the shaft is deepened until it reaches the layer of pure salt. When the shaft has descended about $8^3/_4$ inches below the impure salt, galleries are hewn out in different directions in the Szybick salt; they are as high as houses and as wide as streets. The main galleries are connected by secondary side galleries, thus forming under ground a whole net of galleries, resembling streets and lanes in a town. In breaking the salt, pillars of it are left in each gallery in order to support the roof. As the layer of salt in the neighbourhood of Velitschky is very thick, the galleries there are arranged in five stories. The salt hewn out in these subterranean passages is brought by tramway to the shaft, where it is lifted up to the surface by machinery. There it is broken into small pieces, which is easily done, because it is as *brittle* as glass. These pieces are next taken to the steam mill, where they are ground into white powder like flour. The white powder of salt thus obtained is packed in barrels and sent off for sale.

In order that you may have a better idea of the manner in which the work is done in the salt mines of Velitschky, I give you in the picture a view that would present itself

to us if we could cut the soil at Velitschky in two halves, and take one half off. The picture shows you three stories of subterranean galleries with their supporting pillars, arches



General view of the salt mines at Velitschky.

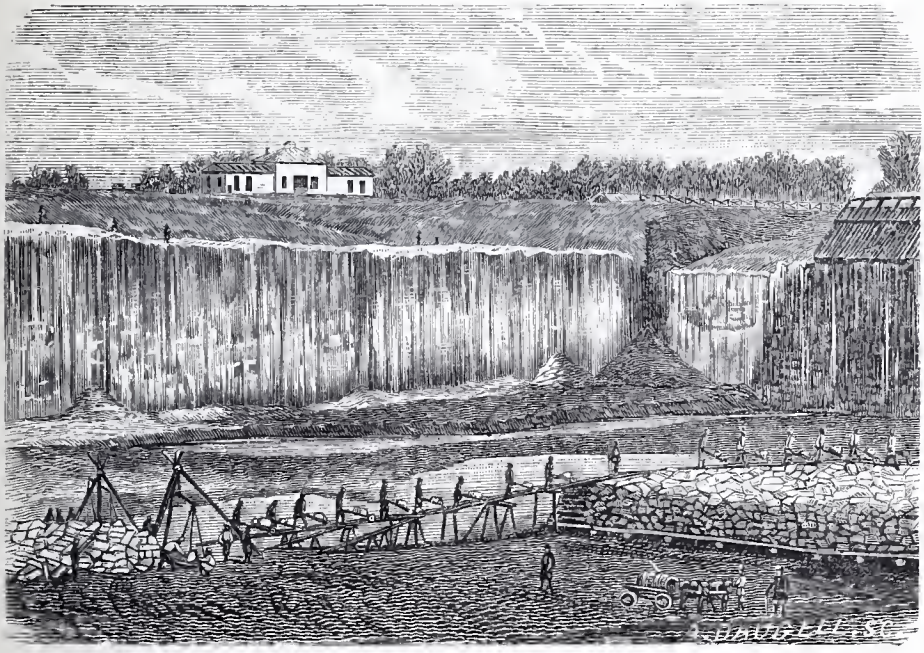
and soil. The most active work is seen to be going on on the right side of the lower story, where some workmen are standing on steps of salt and breaking off bits of it with axes; others are packing salt in barrels and laying them up in one place to be afterwards taken to the elevator. In the second story no work is to be seen, but the picture shows the workmen bringing salt in wheelbarrows from the right side, where it is procured. In the upper story we again see the people working; to the right is the elevator.

The salt mines in Velitschky were discovered in 1105, i. e. 778 years ago; tradition attributes their discovery to St.-Kinigunda, wife of the Polish king Boleslaus V.

The vast subterranean space, hewn out of salt, into which you descend by an excellent staircase, built of stone and brick, presents the aspect of a town with its streets, squares, chapels and dwellings of the workmen and their families. The picture shows the chapel of St.-Anthony. Everything that you see here is hewn out of salt; in this chapel divine service is performed.

In this vast underground place there are also stables for horses, sheds for hay and warehouses for storing the salt. There is a lake also, but its water is a pure saline solution, and therefore cannot be used for drinking. All this subterranean space is always lit up by numerous lights, just as our streets are lit up by lanterns; the sun never shines there. There is no spring, nor summer, nor autumn, nor winter; the air is neither hot nor cold; it is always rather fresh and so impregnated with saline dust that the eyes of the workpeople and horses suffer from it very much; most of the horses get blind; but this does not prevent them from continuing their work. The number of people occupied there generally amounts to 1200, and the quantity of salt procured yearly is about 190 millions of pounds.

Salt is still more abundant in the neighbourhood of Iletsk. The time of its discovery is unknown. Since 1754 it belongs to the government, and since 1868 it has been rented by private persons. Here salt lies in a vast layer, the extent and depth of which are not exactly ascertained. It is known approximatively that a compact layer of salt occupies more than 2535 acres and is 476 feet deep. This layer of salt rises al-



Working of salt in Iletsk.

most to the surface of the earth, and is covered only by a layer of sand mixed with clay about 28 feet thick. The salt not lying deep is procured in a more simple way. A pit is dug down to the layer of salt. There the space is made even, and longitudinal and transverse ditches are hewn out by means of axes at a short distance one from another. These ditches divide the salt layer into large squares detached on all sides but the one beneath. In order to detach them from

below also a large log is used; the thick end of it is struck against the side of a square until it is displaced. The salt procured is divided into *compact* salt consisting of large blocks, and *fine* salt. Both are taken away by the workpeople in wheelbarrows and laid up separately, the compact salt in heaps, and the fine salt in wooden sheds. The amount of salt procured here yearly is about 54 millions of pounds. The salt of Iletsk is one of the best. In blocks it is pure, as transparent as the clearest ice, and so hard that different objets are manufactured from it; reduced to powder it is beautifully white and has a pleasant taste.

Rock salt in Russia is also found in the government of Astrakhan, in mount Chipchachi, 56 miles from the Volga, beyond the Caucasus, and in Siberia, in the district of Yakoutsk.

Now you are acquainted with the manner of procuring salt when it is pure and lies in a large layer. The case is different where it is impure and mixed up with earth. Here nature herself comes to the aid of man. Rain or water from the melted snow is absorbed by the soil; it runs under the earth among stones and clay, which imbibe very little or not any of it, and meets on its way with bits of salt, which dissolve in it. Thus are formed brine springs; they are sometimes so deep in the earth that wells have to be dug to get at the water. If the water comes from a hill and passes a subterranean salt layer, you will generally find a brine spring at the foot of the hill, and then the salt water is easily drawn up in pails. You know already what must be done to procure salt. Water must be evaporated from the solution; this will make it denser, and crystals of salt will begin to precipitate. It is known that water evaporates quicker if the solution is boiled; the steam then rises abundantly; but this requires much fuel, which is

very dear in some places, and this is why the solution is boiled only when it is strong, containing 12 or 14 parts of salt to 100 parts of water. When the solution in the brine spring is weaker than this, it is first made denser by the natural influence of air. With this end in view *graduation houses* are built at the salt works. A graduation house consists of high and long wooden barred walls built at short and equal distances one from another, as is shown in the picture.

The space between the walls is filled up with brushwood. At the top of the graduation house there is a spout, into which the solution from the spring is pumped up by a steam engine. The spout has small apertures through which the water falls upon the brushwood in small drops like rain. Attention is payed to the usual direction of the wind, and the graduation house is so built that the wind should blow not lengthways to the walls but crossways. While the solution comes down like rain upon the brushwood, the wind carries off a good deal of water, especially in hot weather, and therefore the solution having passed through the brushwood becomes denser and collects under the graduation house in a wooden case. If the solution is still not strong enough, it is once more passed through the graduation house.

A sufficiently strong solution is boiled, the water then evaporates, and the solution becomes still stronger. The brine spring solution is not pure; it generally contains fragments of roots, leaves etc. or clay, sand and most of all gypsum, or French plaster; when it is boiled, the light substances rise to the top, and form a foam, which is taken off with ladles. The oftener this is done the purer will be the solution. Solid substances settle at the bottom of the boiler, and form what is called *plaster-stone* which is used as manure. The purified solution is poured into flat boxes. Here by means of slight heat

the solution is made so dense that the crystals of salt begin to precipitate. They are from time to time gathered and placed upon inclined shelves, that the solution left in them may run down. This salt is then dried, collected into bags or barrels, and sold. We have many salterns in Russia; the most celebrated are in the government of Perm. About 468 millions of pounds of salt are yearly procured there.

Sea-water has the taste of a weak saline solution; it contains 3 parts of salt to 100 parts of water. Seas occupy three times as much space as earth, and therefore they contain a large provision of salt. It has been calculated that if the water in all the seas were evaporated, the sediment of salt at their bottom would be about 840 feet thick. If this salt were taken out and spread over the surface of the whole earth, it would cover it in a layer of about 2548 feet thick.

There are different methods of procuring salt, and both summer heat and winter cold are used for this purpose. The method adopted in hot countries is as follows: an even space is chosen on the shore, it is cleared of mire and then not very deep square ponds are dug at a short distance one from another. The bottom and sides of each pond are covered with lime to keep them clean and to prevent the soil from imbibing the solution. The ponds are connected by ditches, so that if water is let into one pond, it runs into all.

If the coast is high, sea-water is pumped up; if it is low, a canal is made to the sea, by which the water passes into the ponds. When the water in the ponds is about 14 inches high, this canal is shut up by a *lock*. The water then evaporates from the heat, and the solution by degrees becomes thicker, till at last salt settles at the bottom. It is then extracted and placed on the banks of the ponds; when it is dry, it is laid up in heaps, and then sent to be sold.

In cold places the extraction of salt from sea-water is effected in a different way. It is founded on the fact that fresh water freezes more readily than salt water. A deep pond is dug out, water is let into it, and it is left to freeze. As soon as the water is frozen, the ice is thrown out of the pond, and the remaining solution is left to freeze again. The ice thrown out of the pond contains a very small quantity of salt; this shows that fresh water freezes more readily than salt water; the solution in the pond has now become denser, because a part of the fresh water has been removed in the form of ice. The solution is left to freeze once more, and when the ice has been thrown off, the solution left is found to be still denser; it is then boiled in salterns, and salt is obtained.

This is the way in which salt is procured in the government of Archangel and in Siberia.

A large quantity of salt is found in *salt steppes* or *salt deserts* which are very numerous in different countries. Sometimes a steppe (as the Mongol salt desert in Asia) extends to several thousands of miles. If you look round in such a steppe, you see nothing but sand, and in some places it is so mixed up with salt, that it covers the surface like a grey crust. Such spots in the steppes are called *salt marshes*.

The country, in which there are many and extensive salt marshes, is poor and barren. The grass grows scantily or not at all; there is no cattle feeding and no dwellings. The sun is so hot during the summer, that it is difficult to breathe. We have such steppes in the Crimea, in Novorossiysk, and most of all in the neighbourhood of the Caspian sea, into which the Volga flows. Only rivers refresh our steppes; on the banks of rivers in valleys there are meadows and villages with gardens. In steppes like these we meet with a great many *salt lakes*, and it is to be noticed, that they are mostly

situated in the proximity of the sea. It is supposed that salt lakes are the remains of a sea, which extended there in times immemorial. Sometimes they are formed by saline rivers or rivulets, which flow through the steppe, and on their way dissolve salt. In hot weather the water in the lake evaporates and leaves a thick solution; when the summer is very hot, and there is but a small quantity of water in the lake, it dries up entirely, and salt settles at the bottom; such salt is called *sedimental* salt. The most interesting salt lake is situated in Asia, in Palestine, not far from the tomb of our Lord Jesus Christ; it is called the *Dead Sea*. Its water contains so much salt and bitumen or *asphalt*, that no animals can live in it, and that is why it is called the „Dead" sea. A dense saline mist, like white smoke, constantly hangs over it. The banks of this lake are so encrusted with salt, that they look as though they were whitened with lime. There is a high rock of pure rock salt not far from the banks of the Dead Sea; pieces of rock salt sometimes fall off, and they are gathered by the Arabs living in the neighbourhood. Salt is not extracted from this lake. In other places very much salt is procured from lakes.

We have salt lakes in the Crimea, in Novorossiysk, and also many in the vicinity of the Caspian Sea. The most remarkable salt lake in Russia is the lake *Elton*, situated in the government of Astrakhan, in the province of Zarewsk, $87^1/_2$ miles from the Volga. This lake is perhaps the richest repository of salt in the world. It occupies a space of 12 miles in length and $9^1/_3$ miles in width. The bottom of the lake is entirely covered with salt, over which there is always a pure and dense brine. The thickness of the salt layer has not been ascertained, but it is well known, that there is a great quantity of salt in the lake Elton. It is sufficient to

say that this lake has been worked for more than 125 years and more than 21,600 millions of pounds of salt have been extracted. The work of 125 years and the extraction of 21,600 millions of pounds are imperceptible to the eye, as though nothing had been taken from the lake.

The extraction of salt from lakes is very simple. The workmen go out in large flat-bottomed boats; at some distance from the shore they get out and standing on the bottom of the lake, which is very shallow (not more than 28 inches in summer), they break the salt, wash the bits, and put them into the boat. As soon as the boat is full, they return to the shore where they throw the salt out without alighting from the boat, and leave it to dry; after some time they take it away to some distance from the shore, lay it up in heaps and sell it. About 4 millions of poods of salt are yearly extracted from the lake Elton. The transport of salt on the Volga is expensive, and therefore the salt from Elton is not in sale everywhere. A much greater amount of salt is extracted from lakes in the Crimea — nearly 500 millions of pounds annually. This salt is transported to different places by people called *Tshoumaki*, who come from Little Russia, and who are specially occupied with the transportation of salt.

You know now where and how salt is procured. It is impossible to calculate the exact quantity of salt procured throughout the world, because it is not everywhere registered. With us in Russia it amounts yearly to more than 1800 millions of pounds, whereas 2160 millions of pounds are yearly consumed; consequently the consumption exceeds the produce by 360 millions of pounds. These 360 millions of pounds of salt are brought to us from other countries, and are sold in those governments, which are situated nearer to foreign salt works, which makes salt brought from abroad cheaper than

Caravan of Tshumaki conveying salt from the Crimea.

our own. In order that you may have a better idea of the amount of salt consumed in our country, I will tell you, that if we were to spread 2160 millions of pounds of salt upon the surface of $2^2/_3$ acres, this quantity would form a pillar 2905 feet high; and if we calculate how much salt is used yearly by each individual in our country, we shall find that it amounts to $23^3/_4$ pounds.

Let us now see how salt is utilized, and why it is useful and indispensable.

Salt enters as a necessary ingredient into the humours and cartilages of our body, and the body of every animal. On the other hand it has been proved, that salt secretes from our body either in a solid state or in a state of solution; it secretes in our perspiration, saliva, tears, etc. Consequently a continual loss of salt is going on in our body. This loss must necessarily be replenished by external means, i. e. by food. Food can be well digested in our stomach and bowels only when it contains salt, because salt contributes towards the formation of gastric juices, which help to dissolve food. All that is useful in food turns into blood, into which also salt enters as an ingredient. Blood flows in veins through the whole body, and brings with it salt, thus replenishing the loss.

You see now that salt is indispensable to man not only as a seasoning giving a pleasant flavour to food, but as a substance without which food is badly digested, and consequently without which our body cannot be nourished, nor even exist. You understand now why salt is used not only by the poor in their huts, but also by the rich at their sumptuous tables. It is both useful and indispensable to all.

It has not yet been ascertained what quantity of salt is indispensable for one individual; but it has been found, that

meat requires less salt than vegetables, because the flesh of beasts, birds and fish contains much more salt than plants.

Salt being used in the kitchen, it is also called *kitchen salt* and *table salt*.

Our food is generally cooked in metal or earthenware vessels, and therefore I must tell you how it influences these substances.

Salt has no effect upon gold and silver, which, however, are not used in the kitchen. Copper and latten are very much influenced by a salt solution, not only when the food is being boiled in them, but even at a usual temperature, and therefore very salt food kept in a copper vessel may become *poisonous*. If you wish to convince yourself of the strong effect of salt upon copper, dip into a salt solution a bit of pure polished copper; you will soon perceive that your bit of copper is covered with a green flaw. This green substance, which has formed on the copper from the effect of the saline solution, is called *verdigris* and is very poisonous. Tin is not so much influenced by salt. That is why copper vessels are *tinned*. Therefore food must never be cooked in untinned or badly tinned copper vessels. Lead and iron deteriorate greatly from the contact of salt. Salt food kept in a leaden vessel becomes injurious; if kept in an iron one, it does not become injurious, but contracts a disagreeable taste. In order to prevent this, iron vessels are covered with *enamel*, which preserves them from the effect of salt. Cast iron vessels are also thus prepared in our days. Salt has no effect whatever upon glass and earthenware.

Salt is also added to the food of cattle, sheep and horses, and is very useful to them, especially if the food is not quite fresh, as in this case it prevents many diseases. Deprived of salt the cattle becomes languid, lazy, and loses the gloss of

its coat. Experience has shown, that it is preferable not to mix the salt with the cattle's food, but to put it in large bits in the stalls, so that the cattle may lick it at its pleasure. Salt is considered necessary to sheep, because it makes their wool grow quicker, and consequently allows them to be oftener shorn. It has been noticed, that cattle feeding on pastures abounding in brine springs and salt marshes is always in a better condition than cattle deprived of salt. The cattle itself feels the necessity of salt; this fact is proved in America, where we meet with footpaths scores of versts in length, made on the planes by wild beasts and leading to salt marshes or salt deserts.

Salt is not much used as manure; the remains of salterns, consisting chiefly of plaster-stone, are generally used for this purpose.

Plants contain but a small quantity of salt, but still it is necessary for their nourishment. Besides conducing to their growth, it is useful to them because it assists them in absorbing other substances, which are indispensable to them. But, as I have already mentioned, vegetation is poor in places, where there is much salt, and salt marshes are quite deprived of it; in seas, however, we find a great many plants feeding on sea salt.

Besides the large expenditure of salt in cooking, very much of it is used for salting provisions. Meat, fish, cabbage, cucumbers and other provisions are salted. Salting is especially necessary where no fresh food is to be got, as on board vessels, also for the transportation of provisions to distant parts, or for the yearly preservation of such kinds of fruit, as can be had only at certain seasons. Salting is used to prevent provisions from spoiling: the water contained in meat and fruit dissolves the salt, and produces a saline solution,

which prevents their putrefaction, because, as it has been ascertained, many of those infusoria, as mouldiness and animalcula, which are invisible to the eye and are always found in putrid provisions and help to putrify them, cannot live or multiply in a saline solution. This is the reason why salt provisions always keep longer.

It is quite impossible to calculate the quantity of salt used for salting all sorts of provisions, as: beef, fish, caviar, cheese etc., because it is difficult to determine the number of persons engaged in this branch of industry, or the places where it is practised, or the quantity of salt used for the purpose; but still we can form an approximate idea of the quantity by the enormous number of herrings and other fish salted yearly. There are many places where the inhabitants are exclusively occupied in salting fish and meat.

Let us also notice that a great number of trees, employed in the construction of vessels, are saturated with salt to prevent them from rotting.

It is difficult to enumerate all the kinds of trade, in which salt is necessary. It has to be used in the manufactories of soda, soda water, soap, glass, cotton, paper and many others.

One of the most important substances procured from kitchen salt in manufactories, specially constructed for the purpose, is soda, known to many as a white powder sold by chemists, which, when combined with an acid, produces an effervescent drink beneficial in headaches. Formerly soda was prepared from the ashes of sea plants which contain much salt, but this was found too expensive, and since a method has been discovered for preparing it straight from kitchen salt, all those manufactories, in which soda is used, have lowered the prices of their productions. This is why glass ware and soap have now become accessible to all.

In procuring soda from kitchen salt, *muriatic acid* is also obtained in the same factories. From this muriatic acid a bleaching substance containing chlorine, the gas that you are already acquainted with, is procured in cotton mills, where it is used for bleaching cotton materials; the bleaching is done so quickly, and costs so little, that the materials are now sold at a low price and brought within the reach of every body.

I may as well mention here, that very often if red wine has been spilt upon a white tablecloth, salt is spread upon the spot in the belief that it will take it out, but this is a mistaken notion, because in this case the bleaching gas does not evaporate. Bleaching by means of chlorine is also practised in paper mills for obtaining white paper. The spread of knowledge in the masses has increased the demand for writing paper, and it is white paper that is mostly required, and not only the grey, as formerly. White paper could not be prepared and sold at such a low price, if the method of bleaching it by means of chlorine were not known. In the manufactories where earthenware is made, salt is also necessary for enamelling. This is done by means of a very simple process. A few handfuls of salt are thrown into the oven, where vessels are placed to be refined. Salt evaporates from the great heat of the oven, and the contact of this vapour with the calcined clay produces on the sides of the vessels a glassy layer, which is lustrous and impermeable, and which is called *enamel*.

Kitchen or table salt is also very useful for the working of silver. The large silver mines in America could not be worked, if a method for obtaining silver by means of quicksilver had not been discovered; but for this purpose silver

must be first combined with chlorine, which is done by roasting the ore with kitchen salt.

Salt is also much used for preparing *cooling mixtures*. It has been ascertained that when salt dissolves, i. e. changes from a solid state to a liquid, a considerable cooling takes place. Thus, if we put salt upon snow or ice before it begins to melt, the water thus obtained will be much colder than it would have been without it. For instance, if we take two parts of snow or stamped ice to one part of salt we can obtain by this mixture 18 degrees of cold. This is why in making ices salt is always put upon the ice or snow, in which the mould with the ices stands.

Kitchen sàlt is also used in preparing what is called *Glauber's salt*, the crystals of which are like transparent needles; it is obtained in the manufactories, where soda is prepared. It is prescribed by doctors as a purgative. It is also used in glass manufactories.

Having mentioned Glauber's salt I may as well tell you that it is found in combination with kitchen salt in many *mineral waters*, which are very beneficial to man in certain diseases. We have such mineral waters in the Caucasus, in the governments of Samara and Novgorod, in the town of Staraya Roossa and in some other places. In foreign countries there are also many such curative salt mineral waters. In some places, as for instance with us in the Crimea, there are salutary salt mud baths, which are very efficacious, especially in scrofula and cachexia. In salterns, where there is much salt vapour, many workpeople have been cured by it, especially those who suffered from scrofula and cachexia. Such is the benefit of salt as *medicine*.

I could name many other cases in which kitchen salt is

used, but they are too numerous, and I do not wish to tire your attention.

From all I have told you about the use of salt in preparing food, in different trades, in manufactories and in medicine, you can now form an idea of its importance in our life. It is as indispensable as air, water and bread. This is the reason why the ancients, knowing that life without it was impossible, worshipped it as a divinity and celebrated feasts in its honour. Superstitious people still attribute to it a special significance; thus, they believe that if salt is spilt, you must expect a quarrel; if you dream of it, you will be ill; and about 500 years ago salt was even considered an excellent exorcism against satan; it used to be placed near to newborn infants to prevent satan from carrying them away.

Besides, with us in Russia, presentation of bread and salt means a greeting, bread and salt being symbols of hospitality. If we say: „he does not want to partake of my bread and salt“, it means: „he does not want to be acquainted with me“.

The word salt sometimes has a particular meaning. Thus our Russian expression: „he has not spared his salt with me“ means: „he has dealt badly with me“.